

Lower Passaic River Restoration Project

Source Control Early Action

June 14, 2007

The Lower Passaic River Restoration Project is a comprehensive study of the 17-mile tidal stretch of the Passaic River from Dundee Dam to Newark Bay in northern New Jersey. The study is being carried out by a partnership of federal and state of New Jersey agencies. During the course of the study, the sediments in the lower eight miles of the river have been identified as a major source of contamination to the 17-mile stretch of the Passaic River and to Newark Bay. The partner agencies have developed a companion Focused Feasibility Study (FFS) to evaluate a range of alternatives that might be implemented as an early action to control this major source of pollution. This action is intended to take place in the near term, while the comprehensive 17-mile study is on-going.

The Risks Are High

Extremely contaminated river sediments present high levels of risk to people's health and the ecosystem. For adults consuming 40 meals per year of fish from the lower Passaic River over 30 years, the risk of developing cancer is one in one hundred. This risk is greater than the range of levels considered acceptable under the superfund program. Well over half of the human health cancer risk is associated with dioxins in the sediment, and the remaining risk is from PCBs and pesticides. Accordingly, fish consumption advisories have been in place for many years. Similar risks are present for wildlife, although metals and pesticides cause most of the risk to fish, while dioxin and PCBs are responsible for most of the risks for animals and birds that eat fish.

Broad Action Needed

The alternatives evaluated all involve taking action over the entire lower eight miles of the river. Because tidal mixing has distributed the contamination throughout the lower eight miles, there is no small hot spot that could be targeted for meaningful action. Taking action over the entire eight miles would substantially reduce human health and ecological risks.

Alternatives Evaluated for Early Action

Preference was given to proven technologies that can be carried out in the near term, without extensive research. The alternatives consist of mechanical dredging and engineered capping, followed by disposal of dredged materials in a near-shore confined disposal facility, either alone or in combination with local thermal treatment.

In addition to the "No Action" alternative that the Superfund program requires be evaluated, six active alternatives were developed:

- 1) Remove fine-grained sediment from the lower eight miles by dredging (cost: \$2.0-\$2.3 billion).
- 2) Cap the sediments of the lower eight miles by placing clean sand and rock over the contaminated sediments (\$0.9-\$1.1 billion).
- 3) Reconstruct the federally-authorized navigation channel, then cap and backfill the lower eight miles (\$1.5-\$1.9 billion).
- 4) Construct a navigation channel for current use, then cap lower eight miles (\$1.3-\$1.6 billion).
- 5) Construct a navigation channel for future use, then cap and backfill lower eight miles (\$1.4-\$1.8 billion).
- 6) Construct a new navigation channel for future usage, dredge fine-grained sediment from one-mile zone where most of inventory is located and from one-mile zone where most of erosion takes place, then cap and backfill the lower eight miles (\$1.5-\$1.8 billion).

Comparing Alternatives to Superfund Decision-Making Criteria

The Superfund program establishes nine criteria for evaluating cleanup alternatives. The criteria address protection of human health and environment, compliance with federal and state requirements, long-term effectiveness, short-term effectiveness, treatment of contamination, implementability, cost, state acceptance and community acceptance. The no action and six active alternatives were compared using the first seven criteria, with the last two to be evaluated following the issuance of a proposed plan for cleaning up the lower Passaic.

The main points from the comparison are as follows:

The six active alternatives all achieve substantial reductions in human health and ecological risks. They all rely on natural recovery processes and institutional controls such as fish consumption advisories, for a period of time after construction to further reduce risk to human health and the environment. In addition, separate source control actions above Dundee Dam are needed.

- Dredging followed by capping or backfill are all technologies that are effective in the long term, with proper design and implementation. Alternatives 1 and 3 rely most heavily on backfill, which is not maintained, while alternatives 2 and 4 rely most on engineered capping, which would be maintained. Alternatives 5 and 6 rely on a combination of both.
- The amount of contaminated sediment removed by dredging under the six active alternatives range from 1.2 million cubic yards (Alternative 2) to 11 million cubic yards (Alternative 1), with the other alternatives falling in-between.
- Larger removal volumes have a greater potential for short-term impacts from dredging re-suspension and associated construction activities. Therefore, Alternative 1 would have a greater adverse impact on the community from construction than Alternative 2, with all other active alternatives falling in-between.
- Alternatives 2 and 4 would cause considerable flooding increases, while Alternatives 1, 3, 5 and 6 would decrease flooding to some extent.
- Alternative 1 and 3 fit within the currently-authorized navigation channel. Alternatives 5 and 6 accommodate the reasonably anticipated future use for the channel defined by the state of New Jersey. The no action alternative and Alternative 4 accommodate current usage of the channel. Alternative 2 does not allow for navigation.
- The alternatives range in cost from \$0.9 billion to \$2.3 billion.

Next Steps

The Focused Feasibility Study will be reviewed by a Remedial Options Work Group, which has been attending meetings relating to the project since its inception and consists of federal and state agencies, environmental and community groups, and potentially responsible parties. Once the Focused Feasibility Study is revised to take the work group's comments into account, EPA will evaluate the no action and the six active alternatives against the decision-making criteria and propose a course of action in a proposed plan. The proposed plan will undergo a formal comment period of 30 to 60 days.